



TRAUMA- AND INJURY-RELATED AMBULANCE CALL OUTS ACROSS THE NORTH WEST OF ENGLAND (2013)



Summary

- In 2013, the North West Ambulance Service (NWAS) recorded 208,246 call outs due to trauma or injury, accounting for 21% of all ambulance call outs.
- Over half (52%) of the trauma- and injury-related call outs were for falls.
- There were slightly more females than males (females=52%) and just under half (48%) of patients were aged 60 years and above.
- Peak times for ambulance call outs were in June, July and August, between 14:00 and 21:59 and on Saturdays and Sundays.
- The crude rate of ambulance call outs across the North West was 2,939.53 per 100,000 population.
- Ambulance call outs were significantly higher than the regional average in Blackpool, Fylde, Lancaster, Liverpool, Manchester and Wirral local authorities.
- Over seven in ten (72%) of call outs were transferred to an emergency department (ED).

ACKNOWLEDGMENTS

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INTRODUCTION

Injuries can be classified by ultimate cause, either intentional or unintentional. Intentional injuries are inflicted deliberately, which can be self-directed (i.e. self-harm or suicide) or violence. Unintentional injuries are accidental and can occur through road traffic collisions, falls, poisoning or sports injury, for example.

Both forms of injury are to some extent preventable through targeted injury prevention strategies¹. Understanding the burden of injuries and at-risk groups is key in the implementation of relevant local and national policies, which is possible through effective surveillance.

The North West Ambulance Service (NWAS) receives 1.1 million emergency calls each year, attending more than 952,000 incidents². On average, paramedic services cost £230 per call out based on 2010/11 figures³. Effective injury prevention strategies can therefore reduce this burden on ambulance services.

The Trauma and Injury Intelligence Group (TIIG) Injury Surveillance System warehouses data provided by the NWAS. In this report, we explore the extent, nature and outcome of trauma- and injury-related ambulance call outs in the North West of England during 2013. The purpose of the analyses is to provide local partners with an overview of the impact of injuries on the NWAS and inform local area assessments of injury prevention activity.

METHODS

The NWAS provide an extract of data to the TIIG on a quarterly basis. Data include all ambulance call outs across the North West and are broken down by:

- Date and time of call out;
- Call out type (e.g. *Assault/Sexual assault, Falls*);
- Call out description (free text description of the call out type);
- Location of call out (both the postcode and geographical coordinates [x/y] of where the ambulance stopped);
- Patient gender and age; and,
- Outcome (hospital or other health care provider transferred to, where applicable).

NWAS data were extracted from the TIIG Injury Surveillance System covering January to December 2013. Duplicate records (i.e. where there were multiple telephone calls for the same incident) and non-injury incidents were removed (see Box 1).

Box 1: Identification of trauma- and injury-related incidents

The NWAS categorises all incidents into broad groups based on the reason for the call out. Trauma- and injury- related call outs have been identified by 13 of these groups, which are:

- Animal bites/attacks
- Assault/sexual assault
- Burns (scolds)/explosion
- Choking
- Drowning (near)/diving accident
- Electrocution/lightning
- Eye problems/injuries
- Falls
- Overdose/poising (ingestion)
- Psychiatric/suicide attempt
- Stab/gunshot/penetrating trauma
- Traffic/transportation accidents
- Traumatic injuries (specific)

For this report, we analysed call outs recorded as one of these groups, although some of these could include cases where an injury has not been incurred and should therefore be treated with caution.

All ambulance call outs relating to trauma or injury (see Box 1) were analysed to explore the extent of incidents, peak times and locations, transfers and patient demography. Call handlers record patient demographics based on the information provided by the person requesting the ambulance. TIIG analysts clean the age data field due to it being provided in varying formats (see Box 2 for further details). The patient gender and age was unavailable for 4% and 8% of call outs respectively.

Box 2: Caveats

The patient age is free text and provided in varying formats, including age in years/months/weeks/days, date of births and year of births. TIIG analysts clean the data so that all ages are available in years, excluding ages where only the year of birth has been provided or where data are unclear.

NWAS are at times called out to locations outside of the region. These have been included in the analyses, however, omitted when reporting on local authority areas of call outs.

Crude rates were calculated for local authority areas. To identify where there were significant differences between areas, 95% confidence intervals (CIs) were calculated. CIs are a range of values indicating the uncertainty there is around the estimation of a calculated rate; the wider the CI, the more uncertainty there is⁴. If the CIs of one area do not overlap the CIs of another area, the difference between the areas is described as statistically significant.

NUMBERS OF TRAUMA- AND INJURY-RELATED CALL OUTS

Between January and December 2013, there were 208,246 ambulance call outs due to trauma or injury (Table 1), representing 21% of all call outs across the North West of England (n=980,146). Falls accounted for over half (52%) of trauma- and injury-related call outs, followed by 12% for psychiatric/suicide attempt and 11% for overdose/poisoning (ingestion). Traumatic injuries (specific) and traffic/transportation accidents each accounted for 9% of call outs, and assault/sexual assault made up 3% of call outs.

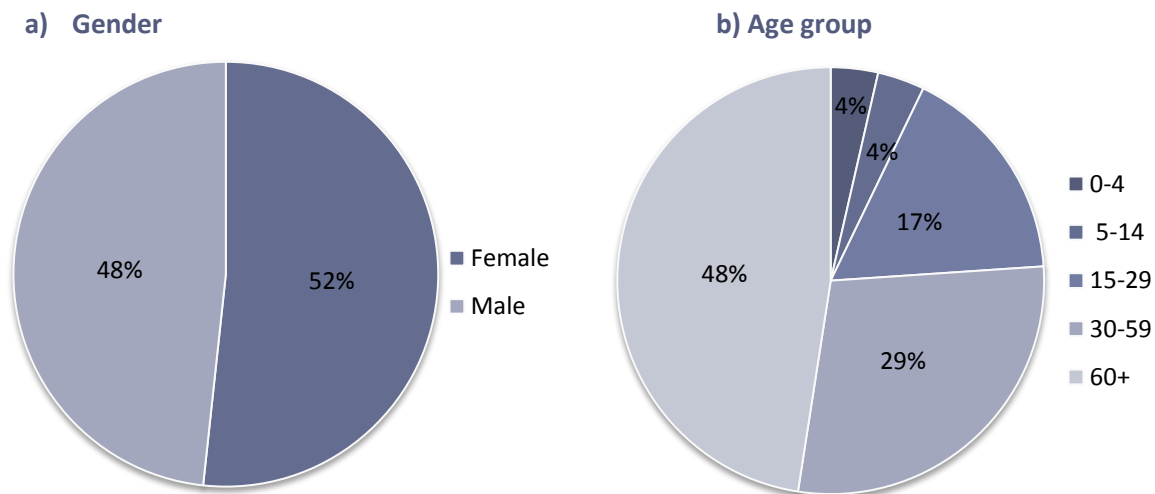
Table 1: Ambulance call outs by incident type, January to December 2013

Incident type	n	%
Falls	108728	52%
Psychiatric/suicide attempt	24544	12%
Overdose/poisoning (ingestion)	22880	11%
Traumatic injuries (specific)	18833	9%
Traffic/transportation accidents	18100	9%
Assault/sexual assault	7091	3%
Burns (scolds)/explosion	2556	1%
Choking	2185	1%
Stab/gunshot/penetrating trauma	1886	1%
Animal bites/attacks	650	<1%
Drowning (near)/diving accident	328	<1%
Eye problems/injuries	322	<1%
Electrocution/lightning	143	<1%
Total	208246	100%

PATIENT DEMOGRAPHY

Figure 1 illustrates the gender and age group of patients. Of the records with a gender recorded, females accounted for over half (52%) of ambulance call outs in 2013 (females=103,437). Just under half (48%) of patients with an age recorded were 60 years and above (n=90,996), followed by less than three in ten (29%) aged between 30 and 59 years (n=54,584).

Figure 1: Ambulance call outs by gender and age group, January to December 2013^A



Total number of ambulance call outs = 208,246.

Table 2 presents the age group and gender for each incident type. More than half (55%) of females were aged 60 years and above, followed by just under a quarter (23%) aged between 30 and 59 years. More than three in five (61%) females had an ambulance call out due to a fall, followed by 12% owing to overdose/poisoning (ingestion) and 11% due to psychiatric/suicide attempt. Falls were more prevalent across all age groups except for females aged between 15 and 29 years, where overdose/poisoning (ingestion) and psychiatric/suicide attempt were more common.

Less than two-fifths (36%) of males were aged 60 years and above, followed by less than a third (32%) aged between 30 and 59 years and 19% aged between 15 and 29 years. Falls accounted for just under half (47%) of ambulance call outs for males, followed by 14% due to psychiatric/suicide attempt, 11% due to traumatic injuries (specific) and 11% owing to overdose/poisoning (ingestion). Falls were more prevalent across all age groups except males aged between 15 and 29 years, where there were more call outs for overdose/poisoning (ingestion), psychiatric/suicide attempt and traumatic injuries (specific) (Table 2).

^A There were 8,204 call outs where the gender was unknown and 16,862 call outs where the age was unknown. These have been omitted from the charts.

Table 2: Ambulance call outs by gender, age group and incident type, January to December 2013^{B,C}

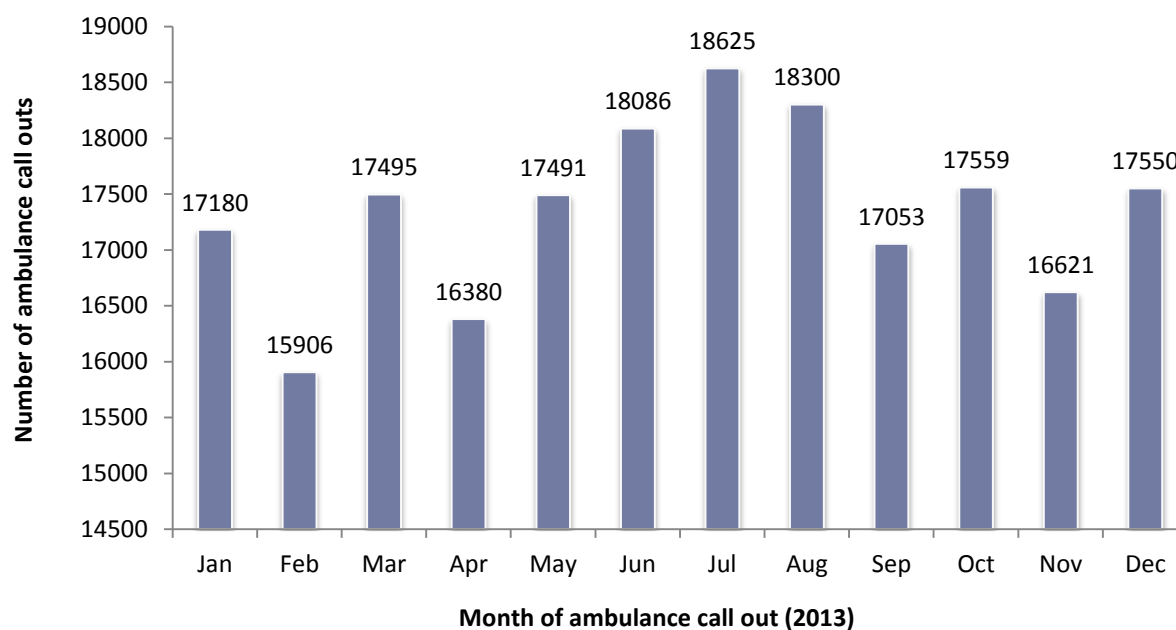
	Age group							Total (%)
	0-4	5-14	15-29	30-59	60+	Unknown	Total (n)	
Incident type	Females							
Falls	1460	936	2440	7533	49761	612	62742	61%
Overdose/poisoning (ingestion)	185	344	4654	5814	920	418	12335	12%
Psychiatric/suicide attempt	***	<215	3276	5789	1247	843	11371	11%
Traumatic injuries (specific)	529	645	1360	1776	3198	152	7660	7%
Traffic/transportation accidents	105	358	1144	1464	690	977	4738	5%
Assault/sexual assault	11	34	691	701	122	340	1899	2%
Choking	392	42	63	158	415	11	1081	1%
Burns(scolds)/explosion	165	43	110	164	137	99	718	1%
Stab/gunshot/penetrating trauma	***	<15	104	139	11	65	331	<1%
Animal bites/attacks	24	27	57	110	43	11	272	<1%
Eye problems/injuries	28	<10	24	27	57	***	145	<1%
Drowning(near)/diving accident	9	7	18	20	5	23	82	<1%
Electrocution/lightning	***	***	23	26	7	***	63	<1%
Total (n)	2916	2669	13964	23721	56613	3554	103437	100%
Total (%)	3%	3%	14%	23%	55%	3%	100%	-
	Age group							Total (%)
	0-4	5-14	15-29	30-59	60+	Unknown	Total (n)	
Incident type	Males							
Falls	1956	1618	2944	9333	29067	692	45610	47%
Psychiatric/suicide attempt	***	116	3488	7224	1167	<1070	13063	14%
Traumatic injuries (specific)	857	1349	3076	3506	1792	427	11007	11%
Overdose/poisoning (ingestion)	181	104	3757	5298	671	377	10388	11%
Traffic/transportation accidents	168	622	2072	2717	914	1587	8080	8%
Assault/sexual assault	8	83	1821	1633	167	645	4357	5%
Stab/gunshot/penetrating trauma	7	38	612	494	46	243	1440	1%
Choking	377	75	87	219	330	11	1099	1%
Burns(scolds)/explosion	239	51	104	142	83	151	770	1%
Animal bites/attacks	23	41	84	139	34	20	341	<1%
Drowning(near)/diving accident	7	19	29	42	28	72	197	<1%
Eye problems/injuries	26	17	40	48	<45	***	176	<1%
Electrocution/lightning	***	8	18	38	***	7	77	<1%
Total (n)	3853	4141	18132	30833	34346	5300	96605	100%
Total (%)	4%	4%	19%	32%	36%	5%	100%	-

^B There were 8,204 call outs where the gender was unknown; these have been omitted from Table 2.^C All numbers less than five have been suppressed (with ***) in line with patient confidentiality and if there is only one number less than five in a category then two numbers have been suppressed to prevent back calculations from totals.

DATE AND TIME OF AMBULANCE CALL OUTS

Figure 2 shows that ambulance call outs across the North West of England in 2013 peaked in June, July and August, with July having the highest number of call outs (n=18,625; 9%), compared to February 2013, the month with the fewest (n= 15,906; 8%).

Figure 2: Ambulance call outs by month, January to December 2013



There were more call outs on Saturdays and Sundays (16% and 15% respectively), peaking between 14:00 and 21:59 (39%) (Table 3).

Table 3: Ambulance call outs by day and time group, January to December 2013

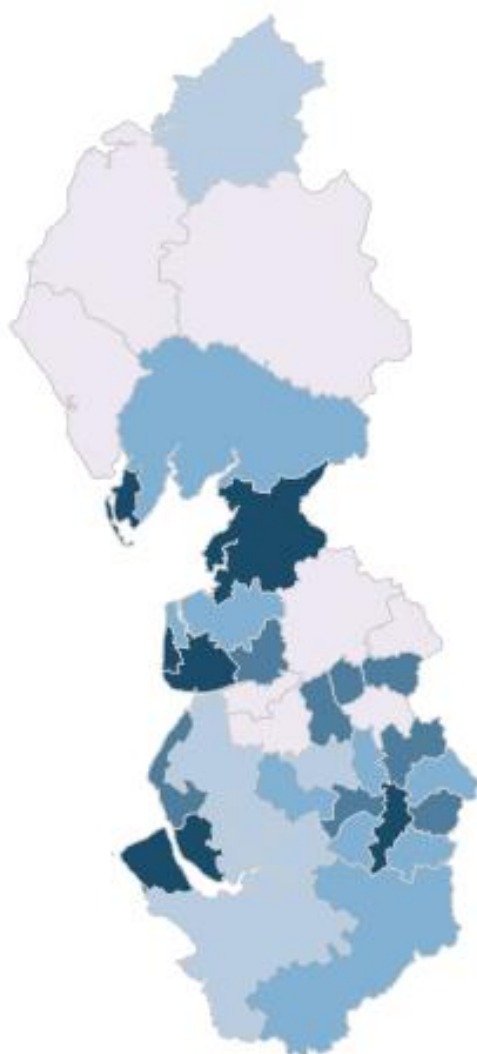
Time group	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Total (n)	Total (%)
00:00-01:59	2010	1954	1796	1845	2042	3189	3571	16407	8%
02:00-03:59	1457	1520	1419	1415	1620	2601	2898	12930	6%
04:00-05:59	1178	1165	1077	1150	1218	1691	1898	9377	5%
06:00-07:59	1509	1596	1526	1610	1569	1671	1551	11032	5%
08:00-09:59	2701	2826	2595	2769	2640	2475	2321	18327	9%
10:00-11:59	2804	2829	2664	2746	2782	2844	2645	19314	9%
12:00-13:59	2774	2906	2760	2738	2789	2897	2784	19648	9%
14:00-15:59	2844	2926	2757	2914	2904	2995	2766	20106	10%
16:00-17:59	2981	3086	3000	3077	3008	3055	2770	20977	10%
18:00-19:59	2932	2914	2918	2946	2967	3102	2899	20678	10%
20:00-21:59	2660	2817	2788	2782	3089	3266	2902	20304	10%
22:00-23:59	2331	2482	2413	2561	3197	3519	2643	19146	9%
Total (n)	28181	29021	27713	28553	29825	33305	31648	208246	100%
Total (%)	14%	14%	13%	14%	14%	16%	15%	100%	-

CALL OUT LOCATION

It should be noted that the location of where the ambulance is requested to may not be the same location as where the incident occurred nor where the patient resides; therefore the crude rate of ambulance call outs is not an injury- or residence-based measure. Furthermore, data shows that there are a number of call outs to locations outside of the North West of England. These call outs have been omitted from Map 1 alongside any invalid or incomplete postcodes.

The crude rate of trauma- and injury-related ambulance call outs across the North West of England in 2013 was 2,939.53 (CI 2,926.92 to 2,952.18) per 100,000 population. Equivalent data for England are not available, so a comparison to the national average cannot be made. However, Map 1 shows variations across the region. Call out rates were significantly higher than the regional average in Blackpool, Fylde, Lancaster, Liverpool, Manchester and Wirral local authorities (see Appendix 1 for a full list).

Map 1: Crude rate of ambulance call outs per 100,000 population (North West local authority areas), January to December 2013



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Key (rate per 100,000):

2,031.4 - 2,560.6
2,560.7 - 2,768.3
2,768.4 - 2,901.7
2,901.8 - 3,060.2
3,060.3 - 4,908.6

TRANSFERS TO HEALTHCARE PROVIDERS

Table 4 shows that more than seven in ten (72%) ambulance call outs led to the patient being transferred to an emergency department (ED), with less than 1% transferred to other healthcare provider (e.g. walk-in centre, hospital without an ED). Over a quarter (27%) of patients were not transferred; such patients may be treated at the scene.

Table 4: Ambulance call outs by transfer description, January to December 2013

Transfer description	n	%
Transferred to ED	150165	72%
No transfer	56390	27%
Transferred to other healthcare provider	867	<1%
Transferred outside North West	824	<1%
Total	208246	100%

Of the patients transferred to an ED, most were taken to Royal Blackburn and Blackpool Victoria Hospitals in Lancashire and Royal Liverpool University Hospital in Merseyside (6% each) (Appendix 2).

APPENDICES

Appendix 1: Number and crude rate of ambulance call outs per 100,000 population by local authority of call out (North West local authority areas only), January to December 2013^D

Local authority	n	Crude rate per 100,000	95% confidence interval	
			Lower limit	Upper limit
Allerdale	2243	2329.95	2234.52	2428.42
Barrow-in-Furness	2096	3062.27	2932.56	3196.24
Blackburn with Darwen	4344	2940.84	2854.03	3029.62
Blackpool	6969	4908.58	4794.00	5025.20
Bolton	7534	2700.51	2639.87	2762.19
Burnley	2593	2976.12	2862.66	3092.92
Bury	5403	2901.73	2824.87	2980.16
Carlisle	2870	2658.59	2562.20	2757.67
Cheshire East	10332	2776.33	2723.05	2830.39
Cheshire West and Chester	8794	2663.23	2607.86	2719.49
Chorley	2793	2560.58	2466.49	2657.34
Copeland	1526	2169.80	2062.29	2281.47
Eden	1243	2360.60	2231.18	2495.58
Fylde	2436	3204.42	3078.42	3334.25
Halton	3297	2623.08	2534.30	2714.18
Hyndburn	2454	3060.23	2940.34	3183.76
Knowsley	4040	2768.34	2683.62	2855.04
Lancaster	4290	3071.64	2980.40	3164.95
Liverpool	16507	3514.45	3461.03	3568.47
Manchester	16775	3284.24	3234.73	3334.33
Oldham	6269	2775.43	2707.15	2845.00
Pendle	2252	2513.03	2410.30	2619.01
Preston	4276	3042.55	2952.03	3135.14
Ribble Valley	1170	2031.39	1916.64	2151.21
Rochdale	6225	2936.04	2863.56	3009.90
Rossendale	1670	2442.73	2326.97	2562.77
Salford	6940	2927.22	2858.75	2996.91
Sefton	8059	2944.50	2880.56	3009.50
South Lakeland	2991	2891.17	2788.47	2996.68
South Ribble	2719	2495.16	2402.24	2590.75
St. Helens	4829	2741.97	2665.18	2820.42
Stockport	8079	2845.75	2784.03	2908.49
Tameside	6587	2990.81	2919.02	3063.93
Trafford	6458	2826.68	2758.15	2896.48
Warrington	5343	2623.59	2553.71	2694.90
West Lancashire	2886	2601.76	2507.69	2698.45
Wigan	9101	2855.93	2797.56	2915.22
Wirral	10158	3172.10	3110.71	3234.40
Wyre	3026	2804.73	2705.68	2906.49
North West	208246	2939.53	2926.92	2952.18

^D Figures do not add up to the North West total as the location of some call outs was outside of the North West region or the postcode was invalid or incomplete. Outside North West = 576; invalid/incomplete postcode = 64; no postcode recorded = 29.

Appendix 2: Ambulance call outs by emergency department transferred to, January to December 2013^E

Emergency department	County	n	%
Royal Blackburn Hospital	Lancashire	8467	6%
Blackpool Victoria Hospital	Lancashire	8365	6%
Royal Liverpool University Hospital	Merseyside	8303	6%
Arrowe Park Hospital	Merseyside	7418	5%
Whiston Hospital	Merseyside	6981	5%
Royal Bolton Hospital	Greater Manchester	6833	5%
Manchester Royal Infirmary	Greater Manchester	6725	4%
Aintree University Hospital	Merseyside	6564	4%
Royal Oldham Hospital	Greater Manchester	6081	4%
Royal Albert Edward Infirmary	Greater Manchester	6058	4%
Warrington General Hospital	Cheshire	5834	4%
Royal Preston Hospital Lancashire	Lancashire	5744	4%
Wythenshawe Hospital	Greater Manchester	5576	4%
Stepping Hill Hospital	Greater Manchester	5537	4%
Leighton Hospital	Cheshire	5272	4%
Tameside General Hospital	Greater Manchester	5182	3%
North Manchester General Hospital	Greater Manchester	5093	3%
Salford Royal Hospital	Greater Manchester	5007	3%
Fairfield General Hospital	Greater Manchester	4163	3%
Royal Lancaster Infirmary	Lancashire	4005	3%
Countess of Chester Hospital	Cheshire	3932	3%
Southport and Formby District General Hospital	Merseyside	3834	3%
Macclesfield District General Hospital	Cheshire	3389	2%
Cumberland Infirmary	Cumbria	3365	2%
Chorley and South Ribble District Hospital	Lancashire	2256	2%
Furness General Hospital	Cumbria	2161	1%
West Cumberland Hospital	Cumbria	2010	1%
Trafford General Hospital	Greater Manchester	1721	1%
Alder Hey Children's Hospital	Merseyside	1442	1%
Royal Manchester Children's Hospital	Greater Manchester	1150	1%
Burnley General Hospital UCC	Lancashire	595	<1%
Rochdale Infirmary UCC	Greater Manchester	575	<1%
Ormskirk District General Hospital	Lancashire	503	<1%
Nearest ED (not specified)	-	24	<1%
Total	-	150165	100%

^E UCC = Urgent Care Centre.

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